

I claim:

1. A power-saving method for an optical navigation device comprising the steps of:

using a sensor to capture a first image and a second image;

5 comparing said first image and said second image;

generating a horizontal displacement of a parallel axis and a vertical displacement of a vertical axis;

controlling the image capture frame rate of said sensor according to the variations of said horizontal displacement and said vertical displacement; and

10 outputting said horizontal displacement and said vertical displacement in an output period.

2. The power-saving method for an optical navigation device as claimed in claim 1, wherein said first image is the image captured by said sensor when said optical navigation device hasn't moved yet.

15 3. The power-saving method for an optical navigation device as claimed in claim 1, wherein said first and second images are compared by a digital signal processor, a central processing unit or a controller.

4. The power-saving method for an optical navigation device as claimed in claim 1, wherein the image capture frame rate of said sensor is increased 20 when the variations of said horizontal displacement and said vertical displacement are larger than an upper threshold.

5. The power-saving method for an optical navigation device as claimed in claim 1, wherein the image capture frame rate of said sensor is decreased when the variations of said horizontal displacement and said vertical

displacement are smaller than a lower threshold.

6. The power-saving method for an optical navigation device as claimed in claim 1, wherein the image capture frame rate of said sensor is maintained when the variations of said horizontal displacement and said vertical displacement are larger than a lower threshold and smaller than an upper threshold.

7. The power-saving method for an optical navigation device as claimed in claim 1, wherein said second image is the image captured by said sensor after a predefined frame rate.

10 8. The power-saving method for an optical navigation device as claimed in claim 7, wherein said frame rate is proportional to said output period.

9. A power-saving method for an optical navigation device, said method accomplishing the power-saving object through a displacement sensor, said method comprising the steps of:

15 using a sensor to capture a first image and a second image;
comparing said first image and said second image to make sure there is no displacement as long as said first image is equal to said second image;

lasting for a first waiting period; or

lasting for a second waiting period; or

20 entering a sleeping mode;

inputting a current via said displacement sensor to break off said sleeping mode; and

starting to capture images with said sensor.

10. The power-saving method for an optical navigation device as claimed in

claim 9, wherein said sensor won't be driven to detect whether said optical navigation device moves or not during said sleeping mode.

11. The power-saving method for an optical navigation device as claimed in
claim 9, wherein said displacement sensor can be a mechanical structure, a
5 semiconductor micro-electro-mechanical (MEMS) structure, an assembly of
the above two structures, or any structure capable of detecting displacement.